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Brand Switching Behaviour of Summer Groundnut Farmers Towards Insecticides in Rajkot District of Gujarat

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ABSTRACT: The agrochemical industry plays a crucial role in protecting crops and ensuring sustainable agricultural productivity. In India, groundnut cultivation is a major source of edible oil and insecticide are vital for pest control and yield enhancement. The buying of insecticides is influenced by varieties of factors such as price, promotion, product quality, availability, retailers' suggestions, peer influence etc. These factors make brand switching common in insecticides. In this view, the present study investigates the brand switching behaviour of summer groundnut farmers towards insecticides in Rajkot district of Gujarat. For the study descriptive research design was employed. The primary data were collected from 200 farmers using multi-stage sampling method. The structured interview schedule was used as data collection instrument. The findings of the studyreveal that farmers prefer to purchase insecticide from local dealers, the agro-input retailers are their primary source of information. Further, the regression analysis suggest that quality, promotional efforts and perceived values are significant factors for brand swathing for insecticides in the study area. The study highlights the need to maintain product quality, enhance value and promotional strategies to reduce brand switching and build farmers loyalty. The study will helpful to the insecticides players in designing their marketing strategies for insecticides.

Keywords: Agriculture Input, Agrochemical, Agri- Input Buying Behaviour, Brand switching, Summer groundnut farmers, Insecticide, Farmer behaviour.

INTRODUCTION

The agrochemical industry is essential for supporting global food production by providing inputs that protect crops and improve crops yield (Aktar *et al.*, 2009). In 2023, the industry reached a market size of USD 271.42 billion and is projected to grow USD 390.17 billion by 2030, with a CAGR of 5.4% globally. (Grand view research, 2025) As per world meter report 2022, China uses the most pesticides at 13.1 kg per hectare, while India uses 0.3 kg per hectare with 13th rank. The Asia-Pacific agrochemical intermediates market was valued at USD 21,735.13 million in 2022 and is expected to grow at 4.24% CAGR in 2028 (Techsci research, 2025). In India, the agrochemical sector is expanding with the market expected to reach USD 8.53 billion in 2025 and will grow to USD 10.38 billion by 2030 at a CAGR of 4% (Mordor intelligence, 2025). Many companies are active in India such as Bayer crop science ltd., PI industries, Dhanukaagritech ltd. and UPL ltd and others (Times of Agriculture, 2025). Agrochemical includes pesticides (insecticide, herbicide, fungicide, algaecides, rodenticides, molluscicides, nematicides), fertilizers, soil conditioners and plant growth promoters (Mishra, 2024). These pesticides help to control insect-pest damage, weeds, fungal disease as well as manage productivity of crop (Ara *et al.*, 2024). Modern agricultural practices increasingly rely on chemical fertilizers and pesticides to maintain consistent and sustainable crop yield (Zhan *et al.*, 2021). However new concepts like integrated pest management can help reduce chemical input while sustaining agricultural output (Pretty & Bharucha 2015). Groundnut is the major oilseed crop in India, and it plays a major role in bridging the vegetable oil deficit in the country (Ashwini & Khobarkar 2022). Groundnuts give best yield by using agrochemicals to control the groundnut pests and disease like aphids, thrips, early leaf spot, whitegrub, powdery mildew and others (Nigam, 2015).

In addition, collar rot is a major soil and seed born disease in groundnut that reduces seed quality and yield (Debata & Das 2023). India is the second largest producer of groundnut in the world (APEDA, 2024). In India 2022, Total 4.56 million hectares were grown, where Gujarat covering highest 1.71 million hectares followed by Rajasthan and Andhra Pradesh (APEDA, 2022). Gujarat produced 2.81 million tons of groundnut with an average yield of 1,647 kg per hectare andBhavnagar district had the highest yield (2,260 kg / ha) and lowest yield Jamnagar (925 kg /ha) (APEDA, 2022). In 2023-2024, India exported 680,688 metric tons of groundnut in world (APEDA, 2024). The consumer behaviour involves processes influenced by multiple personal and social factors that shape decision-making process, brand choice and purchasing preferences (Haidery *et al.*, 2021). In agriculture, understanding farmers buying behaviour towards insecticides is helps to bridge the gap between their needs and the products available in the market (Jain & Rathore 2023). The companies should enhance dealer-oriented promotional schemes, provide better credit terms, and emphasize field demonstrations and farmer meetings to increase product familiarity and influence farmers' purchasing decisions. It was also emphasized that pesticide manufacturers ought to simplify their marketing materials and incorporate regional languages for promoting product awareness among the less educated farmers (Zapda and Thakkar 2024).

In agricultural marketing, a strong brand image helps to retain the customers and also to attract new customers (Bojan *et al.*, 2020). Maintaining this requires to understanding brand switching behaviour of summer groundnut farmers towards insecticides. The study was undertaken to explore the brand switching behaviour of summer groundnut farmers towards insecticides.

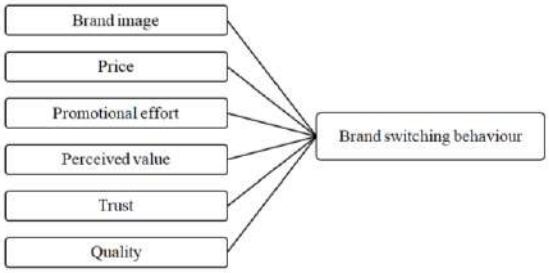
Brand Switching Behaviour: Brand switching is when consumer change in the preferences from one brand to another brand due to dissatisfaction with a brand or the perception that a different brand better meets their needs (Ramachandran, 2013). Brand switching significantly impacts market share, loyalty and growth for some companies while creating opportunities for others. It is driven by internal factors such as trust and satisfaction and external factors like price, product quality, promotion and brand image (Pratama & Haryanto 2025).

Objectives of study

1) To study socio-economic profile of summer groundnut farmers

2) To study brand switching behaviour of summer groundnut farmers toward insecticides

Conceptual framework



METHODS AND MATERIAL

To address the research objectives of present study the descriptive research design was used. The primary data was collected from summer groundnut growing farmers through personal interviews. Out of 14 talukas of Rajkot district, the research was conducted in four talukas of Rajkot district. According to APEDA report 2022, kharif groundnut grown in Rajkot district was 2,42,700 hectares and production was 5,06,272 MT (APEDA, 2022). A multi-stage sampling method was used in present study. In first stage, four talukas of Rajkot district were randomly chosen. In second stage, 5 villages of each taluka were randomly selected. In third stage, 10 summer groundnut growing farmers were randomly selected form each of these villages, as a results 200 groundnut growing farmer were achieved as sample size. The structured interview schedule prepared by referencing previous research is used as data collection instrument.

Instrument. The structured interview schedule consists of demographic profile questions and research questions was utilized to collect primary data. To address brand switching behaviour, various constructs were identified referencing previous research. For quality construct, the (3) item statements were adopted fromthe study of Walsh *et al.* (2014), for price construct, the (5) item statements were adopted from the study of Han & Ryu (2009); Walsh *et al.* (2014), for perceived value, the 3 item statements were adopted from the study of Ali & Bhasin (2019), for promotional effort, the 3 item statements were adopted from the study of Tain *et al.* (2022); Zekiri & Hasani (2015), for brand image, the 5 item statements were adopted from the study of Jin *et al.* (2012); Tain *et al.* (2022), for trust, the 2 item statements were adopted from the study of Tain *et al*. (2022) and Brand switching, the 3 item statements were adopted from the study of Hsu & Chang (2006); Govender (2017); Sharma *et al*. (2017). The respondents were asked to record their opinion on statements using five point likert scale anchored at 1= strongly disagree to 5= strongly agree. The collected data were transferred to MS-Excel and then analyzed with tabular analysis. Further, the mean score for each construct wascalculated and then regression analysis was performed.

RESULT AND DISCUSSION

A. Socio-economic profile of summer groundnut farmers

In Table 1 shows that, socio-economic profile of summer groundnut farmers. Out of 200 farmers, the majority of farmers (59 %) were within the age group of 41 to 60 years. This was followed by farmers aged 21 to 40 years (32%). Only 7% of farmers were above 60 years of age, and only 2 % were up to 20 years of age. In case of educational background of farmers, 63% of the farmers had completed education up to SSC/ITI or below. Around 27 % had completed HSC/Diploma qualifications, 8% were graduates and only 2% had pursued postgraduate studies.

Out of 200 farmers, 75% of the farmers earned more than 5,00,000. Another 23% reported income between 4,00,001 to 5,00,000. While 2% earned between 3,00,001 to 4,00,000. None of farmers reported earnings below 2,00,000. These results are in agreement with those of (Patel, 2016), who also found that majority of farmers (28.66%) in Sabarkantha district wasearned between 2,00,001 to 3,00,000 annually followed by 23.05% had annual income in between 1,00,001 to 2,00,000. With respect to landholding size, 39% of farmers were classified as small farmers, owning between 1.01 to 2.00 hectares. Semi-medium farmers (34%) had between 2.01 to 4.00 hectares of land. While marginal farmers (up to 1.00 hectare) accounted for 12 %. Medium and large farmers comprised 9% and 6% respectively.

A majority (68%) of farmers were engaged in both agriculture and animal husbandry. About 14 % were only involved in agriculture, 10% combined agriculture with service, and only 8% were engaged in both agriculture and business. All farmers (100 %) in the study area practiced irrigated farming. Every farmer used bore wells as their primary source of irrigation, and all farmers used surface irrigation methods for irrigating summer groundnut.

Table 1: Socio-Economic Profile of Summer Groundnut Farmers.

Farmers (n = 200)		
	Frequency	**Percentage (%)**
Gender		
Male	200	100%
Female	0	0%
Age (in year)		
Up to 20 years	4	2.00%
21 – 40 years	65	32.50%
41 – 60 years	118	59.00%
Above 60 years	13	6.50%
Land Holding size of Farmers (in Ha)		
Marginal (Up to 1 Ha)	24	12.00 %
Small (1.01 – 2.00 Ha)	77	38.50 %
Semi – Medium (2.01 – 4.00 Ha)	68	34.00%
Medium (4.01 – 10 Ha)	18	9.00 %
Large (More than 10 Ha)	13	6.50 %
Education Level of Farmers		
SSC/ITI, & Below	125	62.50 %
HSC/Diploma	55	27.50 %
Graduate	16	8.00 %
Post Graduate	4	2.00 %
Occupation of Farmers		
Only Agriculture	29	14.50 %
Agriculture and Animal husbandry	135	67.50 %
Agriculture and Service	19	9.50 %
Agriculture and Business	17	8.50 %
Annual Income of Farmers (in Rupees)		
Below 2,00,000	0	0 %
2,00,001 – 3,00,000	0	0 %
3,00,001 – 4,00,000	4	2.00 %
4,00,001 – 5,00,000	46	23.00 %
Above 5,00,000	150	75.00 %
Type of Farming adopted by Farmers		
Irrigated	200	100 %
Rainfed	0	0 %
Source of Irrigation		
Bore well	200	100 %
Canal	0	0 %

Open well	0	0 %
Others	0	0 %
Method of Irrigation		
Surface	200	100 %
Drip	0	0 %
Sprinkler	0	0%

Table 2: Place of Purchase for Insecticide.

Places of Purchase	Frequency	Percentage (%)
Online platform	0	0.00%
Local dealers	143	71.50 %
Both	57	28.50 %
Total	**200**	**100 %**

Table 2 shows that out of 200 farmers surveyed, the majority (71.50%) purchased insecticide from local dealers, followed by 28.50% buying insecticide from both local dealers and online platforms. None of the farmers buying insecticide through only online platform. These finding support the observation made by Prajapati (2016), who observed that most of farmers in Mehsana district buying insecticide from retailer's shop (76.70%) followed by dealer's shops (20.80%) and only (2.50%) farmers purchased insecticide from co-operatives.

Table 3: Source of Information for Purchasing Insecticide.

(n = 200, based on multiple responses)		
Source of Information	**Frequency**	**Rank**
Advertisement	53	IV
Field demonstration	39	V
Farmer's meeting	104	III
Progressive farmers	131	II
Agri input retailer	200	I

According to the data presented in Table 3, and based on multiple responses given by farmers, all surveyed farmers (n = 200) identified agro input retailers as their primary source of information. This was followed by progressive farmers, farmer's meeting, advertisement and on-field demonstrations. (Sharma, 2020) found that 50% of farmers were preferring the experience of their peer group as their source of information for agrochemicals, followed by advice of dealers, extension specialist, demonstrations and advertisements.

Regression Analysis: Regression analysis is a useful statistical method that helps in understanding the effect of independent variables on dependent variable (Rungsrisawat *et al.,* 2019). In present study the dependent variable is brand switching behaviour and the independent variable include quality, price, perceived value, brand image, promotional effort and trust.

Table 4: Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbinwatson
1	.444	0.197	0.172	.431658652417646	1.863

(a) Predictors: (Constant), quality, price, perceived value, promotional effort, brand image, trust
(b) Dependent variable: Brand switching behaviour

As shown in Table 4 the model summary, the multiple regression analysis given R Square value as 0.197, meaning that approximately 19.7 % of variation in brand switching can be explained by the selected independent factors like brand image, perceived value, quality, trust, price, promotional efforts. Further, the Durbing Watson value was found 1.863. The Durbin-Watson statistics value between 1.5 to 2.5 is considered as acceptable as they suggest small or very small auto correlation (Turner, 2020).

The ANOVA test in regression analysis shows how accurately the independent variables explain the dependent variable (brand switching behaviour). In this study, the regression model shows a strong ability to predict the independent variable. The p – value is less than the 0.05 level, indicating that the model offers a statistically significant explanation for the dependent variable Table 5.

Table 5: ANOVA.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	8.818	6	1.470	7.888	0.000
	Residual	35.962	193	0.186		
	Total	44.780	199			

(a) Dependent variable: Brand switching behaviour
(b) Predictors: (constant), quality, price, perceived value, promotional effort, brand image, trust

Table 6: Coefficients.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
Constant	3.104	0.395		7.858	0.000		
Brand image	0.127	0.069	0.139	1.841	0.067	0.726	1.377
Price	-0.132	0.096	-0.099	-1.385	0.168	0.818	1.223
Promotional effort	-0.166	0.057	-0.220	-2.925	0.004	0.738	1.355
Perceived value	0.238	0.064	0.271	3.727	0.000	0.785	1.274
Trust	-0.015	0.055	-0.021	-0.266	0.791	0.663	1.508
Quality	0.308	0.066	0.336	4.627	0.000	0.787	1.271

(a) Dependent variable: brand switching behaviour
(b) Predictors: (constant), quality, price, perceived value, promotional effort, brand image, trust

The coefficients in multiple regression analysis helptohighlighting the contribution of each independent variable that influence dependent variable (brand switching behaviour of farmers). The unstandardized coefficient B values indicate the effect of each factor. Based on the significance value among the independent variables, quality ($B = 0.308$, $p < 0.001$) and perceived value ($B = 0.238$, $p < 0.001$) are statistically significant and positively associated with brand switching behaviour. Farmers suggest that perceive higher quality products and values are more likely to switch brand. Promotional efforts show as significant negative influence, meaning that as these factors increase the rate of brand switching decrease. Brand image, priceand Trust did not have a significant influence on brand switching. Further, according to Kim (2019) multicollinearity exist if the variance inflation factor (VIF) and tolerance are greater than 5 to 10 and lower than 0.1 to 0.2, respectively. In present analysis the VIF for all independent variables were found below 1.5 and tolerance found between 0.663 to 0.818 which represent that no multicollinearity exists.

These finding support the observation made by Patel *et al*. (2022), who observed that the primary drivers of brand switching towards various brands of chilli seeds in Vadodara region include dissatisfaction with previously used brand and the influence of positive word of mouth communication these factors have highly effect of brand switching behaviour of farmers. Additionally, promotional activities and advertisements play important role in encouraging brand switching behaviour. These results align with the finding of Velavan *et al*. (2015), who reported that the study on Bt cotton farmers mainly switching brands due to varietal traits like high yield and pest resistance, followed by factors such as promotion activities like credit and advertisement and support from company representative also influenced their decision related to switching brand of Bt cotton.These finding support the observation made by Arun & Muralikumara (2024) who reported that brand switching behaviour of telecom customers. Based on analysis, found that customer satisfaction, service quality, price and customer loyalty are the main factors that significantly influence brand switching behaviour among telecom customers in Kerala. These variables show strong significant and contribute notably to customer's decision to switch brands. In contrast, brand image and trust do not have a significant impact on brand switching behaviour of telecom farmers.

CONCLUSIONS

Insecticides are very important agricultural input. They are considered as yield saving farm input and the buying behaviour of insecticides affect by varieties of factors. The present study tries to examine the socio-economic profile and brand switching behaviour of summer groundnut famers towards insecticide in Rajkot district.The research found that farmers select agro input retailers as their primary source of information followed by progressive farmers, farmer's meeting, advertisement and on-field demonstrations.The result show that switching decision are mainly driven by perceived value, Quality and promotional efforts for insecticides used in groundnut crop in study area. These insights suggest that companies should focus on maintaining high product quality, offering strong value, and implementing effective promotional activities to build loyalty and reduce switching among famers.

FUTURE SCOPE

Future studies can be extended to other regions to compare results, while also including new aspects such as the role of digital platforms and safe use of pesticide

practices. Theses insights suggest that companies should modify their marketing strategies to highlight quality, value and effective promotions. Long-term studies are also needed to track how farmer'sbrand switching behaviour change with new technology and market growth.

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Conflict of Interest. None.

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